Effects of a treatment without antibiotics in anoestrous cows suffering from/with a chronic endometritis on fertility

Original title / Originaltitel
Auswirkungen eines Verzichts auf Antibiotika im Rahmen der Behandlung von chronischen Endometritiden bei azyklischen Kühen auf die Fertilität

Summary / Zusammenfassung
The lactational incidence of endometritis in dairy cows during the postpartal period is high. A study performed more than one decade ago revealed a lactational incidence of 14.4% in Swiss dairy cows (Knutti et al., 2000). More recent studies from England and Germany reported even higher rates of 24% (Williams et al., 2005), 37% (Drillich et al., 2005), 40% (Pleticha et al., 2009), 40 and 42% (Westermann et al., 2010).

Endometritis has distinct negative effects on the reproductive performance of dairy cows. Affected animals have longer calving-to-conception intervals (Bosberry and Dobson, 1989; Fourichon et al., 2000), lower overall pregnancy rates (Gilbert et al., 2005; McDougall, 2001) and increased culling rates (Kossaibati and Esslemont, 1997). Cows with clinical endometritis require 10% more inseminations, have a prolonged median time to get pregnant and have a 1.7 times higher risk to be culled because of reproductive failure compared to cows without endometritis (LeBlanc et al., 2002a). Thus, the economic impact of this disease is substantial (Kossaibati and Esslemont, 1997).

Treatment protocols differ between cows with and without a functional corpus luteum (CL) on one of the ovaries. According to internationally acknowledged recommendations, cows with a CL should be treated with PGF2α in order to induce a luteolysis followed by an oestrus. The latter should ensure a self-cleaning processes of the uterus and healing of the inflammation (LeBlanc et al., 2002b). However, up to now there is no generally accepted treatment protocol for cows without a CL. Although the efficiency of an intrauterine application of antibiotics has not been clearly proven, it is widely used in veterinary practice due to lacking of alternatives. Antibiotics of the cephalosporin group are commonly used although they are regarded as reserve antibiotics. In most cases the therapy is based on the presence of abnormal vaginal discharge without previous testing of the bacterial load in the uterus. In Switzerland there are no current studies about type and antibiotic resistance of intrauterine bacteria in patients suffering from clinical endometritis.

In this study a novel therapeutic approach without intrauterine application of antibiotics is tested and compared with an intrauterine antibiotic treatment of anoestrous cows. If the hypothesis that the treatment without antibiotics is as efficient as the treatment with antibiotics the results of the study would allow to reduce the use of of antibiotics. Furthermore, the intrauterine bacterial content and their resistance to antibiotics will be investigated in Swiss cows suffering from an endometritis to allow a more target oriented antibiotic treatment if the above mentioned hypothesis can not be confirmed. This could also lead to the reduction of treatments using reserve antibiotics. In addition, the investigation of associations between clinical signs and the intrauterine bacterial content could also lead to a more precise treatment of cows without using reserve antibiotics.

Two hundred cows with endometritis without a CL on day 25 to 45 post partum are enrolled in the study. The cows are randomly divided into two groups of 100 animals each. The cows of the first group are treated with GnRH just after having made the diagnosis (day 25 to 45 p. p.). Additionally an intravaginal progesterone-releasing device is used in cows of the first group with no follicle ≥ 1
cm on the ovaries. Seven days later (day 32 to 52 post partum) these cows are treated with PGF2α. The intravaginal device is removed at the same time. Fourteen days later (day 46 to 66 post partum) cows with a CL on one of the ovaries are again treated with PGF2α.

The 100 cows of group 2 are treated with an intrauterine infusion of 500 mg cefapirin after having made the diagnosis (day 25 to 45 p. p.).

A comparison of the clinical efficacy of the two different therapeutic approaches (group 1 and 2) is made by calculating different fertility parameters such as the calving-to-conception interval and the insemination index.

Additionally, in all cows uterine swab samples for bacteriological culture are planned to be taken in order to determine the intrauterine bacterial content and the antibiotic resistance patterns in Swiss dairy cows.

Publications / Publikationen


Fourichon, C., Seegers, H., Malher, X., 2000, Effect of disease on reproduction in the dairy cow: a
meta-analysis. Theriogenology 53, 1729-1759.


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